United States Patent [19]

Voeste

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[54] **METHOD OF AND APPARATUS FOR REMOVING SULFUR OXIDES FROM EXHAUST GASES FORMED BY COMBUSTION**

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[51] **Int. Cl.**[3] **C01B 17/00**

[52] **U.S. Cl.** **423/242;** 423/166; 423/421; 423/422

[58] **Field of Search** ..... 423/242 A, 242 R, 244 A, 423/244 R, 166, 552, 421, 422

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[57] **ABSTRACT**

A process for removing sulfur oxides from exhaust gas formed by combustion particularly exhaust gas from an electricity-generating power plant. The exhaust gas flows through a reaction zone which operates like a spray dryer. A purifying liquor consisting of an aqueous solution of sodium carbonate and/or sodium bicarbonate is sprayed into the reaction zone, in which the heat content of the exhaust gases causes virtually all of the water content of the purifying liquor to be evaporated. The exhaust gas is subsequently passed through a filter. Anhydrous solids are withdrawn from the reaction zone and the filter and contain at least 75% of sodium sulfite, sodium sulfate and sodium chloride and are processed to form sodium carbonate. To that end the solids are dissolved and sulfite is oxidized to form sulfate so that a solution that contains sodium sulfate and sodium chloride is formed. The sulfate is separated from that solution and the remaining solution is used in the recovery of sodium carbonate by the Solvay process.

11 Claims, 2 Drawing Figures